

#### PATENT APPLICATION

### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Masato TSUKADA

Appln. No.: 09/666,801

Confirmation No.: not assigned

Filed: September 21, 2000

For:

APPARATUS AND METHOD FOR AUTOMATIC COLOR CORRECTION AND

RECORDING MEDIUM STORING A CONTROL PROGRAM THEREFOR

#### SUBMISSION OF FORMAL DRAWINGS

Commissioner for Patents Washington, D.C. 20231

Sir:

Submitted herewith please find 14 sheets of formal drawings. The Examiner is respectfully requested to acknowledge receipt of these formal drawings which replace the informal drawings filed with the application on September 21, 2000.

Respectfully submitted,

Attorney Docket Q60955

Group Art Unit: 2612

Examiner: Unknown

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Date:

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J. Frank Osha

Registration No. 24,625

Control Program Therefor
Masato Tsukada
09/666,801

Q60955

FIG. 1

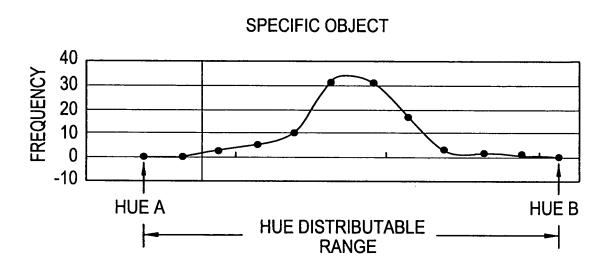
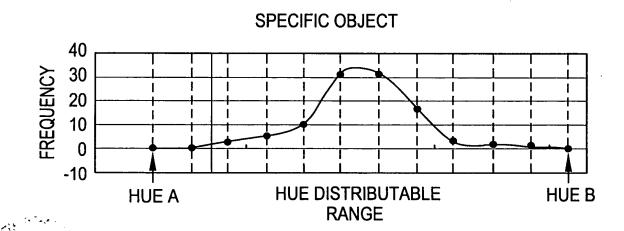


FIG. 2



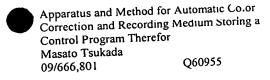
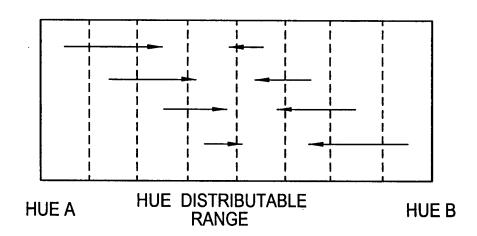
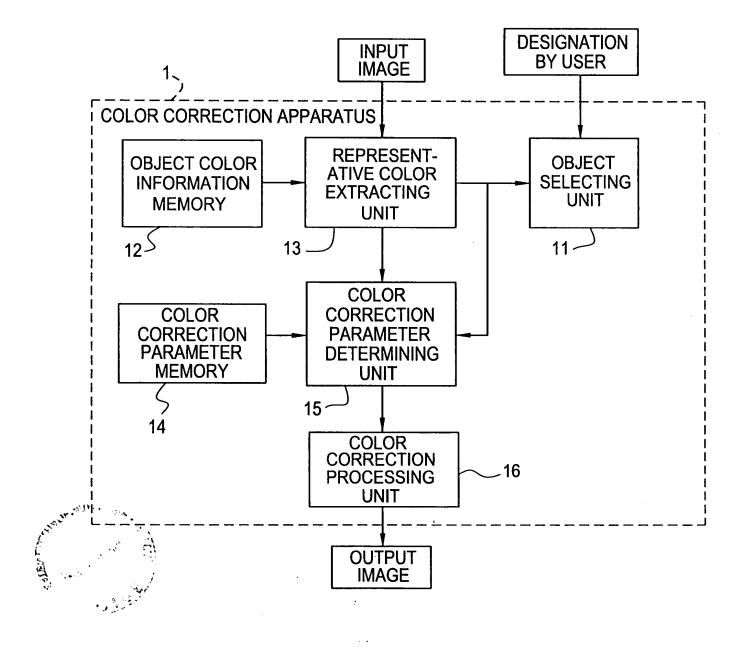


FIG. 3



Apparatus and Ivietnod for Automatic Color Confection and Recording Medium Storing a Control Program Therefor Masato Tsukada 09/666,801 Q60955

FIG. 4



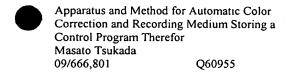
# FIG. 5

SELECTION OF OBJECT FOR COLOR CORRECTION			
SKIN COLOR			
GREEN VEGETATION			
BLUE SKY	SELECTION OK		

FIG. 6

OBJECT A			
SPLIT REGION NO.	LOWER LIMIT HUE	UPPER LIMIT HUE	FREQUENCY
SPLIT REGION 1	HUE 1	HUE 2	0.01
SPLIT REGION 2	HUE 2	HUE 3	0.02
SPLIT REGION 3	HUE 3	HUE 4	0.03
:	:	:	•
SPLIT REGION N	HUE N	HUE N+1	0.01





## FIG. 7

OBJECT A			- · · · · · · · · · · · · · · · · · · ·	
SPLIT REGION NO.	PARAMETER			
	1	2	3	4
SPLIT REGION 1	P1	Q1	R1	S1
SPLIT REGION 2	P2	Q2	R2	S2
SPLIT REGION 3	P3	Q3	R3	S3
•	•	:	•	•
SPLIT REGION N	PN	QN	RN	SN

FIG. 8

START

REPRESENTATIVE COLOR OF SPECIFIC OBJECT IS EXTRACTED FROM GIVEN INPUT IMAGE

<u>\$</u>1

WITH REFERENCE TO COLOR CORRECTION PARAMETERS PRELIMINARILY ASSIGNED TO SPLIT COLOR REGIONS OBTAINED BY SPLITTING HUE DISTRIBUTABLE REGION OF SPECIFIC OBJECT, OPTIMUM COLOR CORRECTION PARAMETER ADAPTED TO EXTRACTED REPRESENTATIVE COLOR IS DETERMINED

S<sub>2</sub>

COLOR CORRECTION CONVERSION ACTING ONLY UPON SPECIFIC HUE IS CARRIED OUT BY THE USE OF OPTIMUM COLOR CORRECTION PARAMETER

**S3** 

**START** 

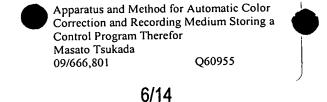
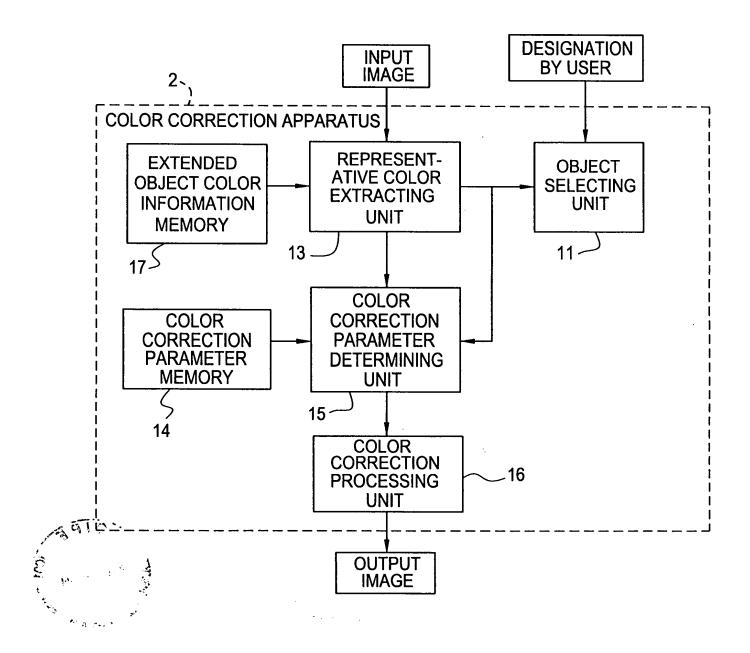


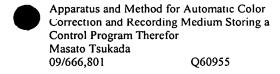
FIG. 9





OBJECT A	A					
SPLIT BY HUE SPLIT BY SATUR		ATURATION		SPLIT BY BRIGHTNESS		
LOWER LIMIT	UPPER LIMIT	LOWER LIMIT		PER MIT	LOWER LIMIT	UPPER LIMIT
HUE 1	HUE 2	SATURA- TION 1	SAT TIOI	URA- N 2	BRIGHT- NESS 1	BRIGHT- NESS 2
HUE 2	HUE 3	SATURA- TION 2		URA- N 3	BRIGHT- NESS 2	BRIGHT- NESS 3
÷	•	•		•	•	•
HUE N	HUE N+1	SATURA- TION M		URA- V M+1	BRIGHT- NESS L	BRIGHT- NESS L+1
SPLIT REG	ION NO.	FREQUEN	CY		1	
SPLIT RE	GION 1	0.01			S	PLIT
SPLIT RE	GION 2	0.02			1	DRMATION   ECTION
:		:			52011011	
SPLIT REGIO	ON NxMxL	0.01			SPLIT INFORM/ SECTI	ATION







START

REPRESENTATIVE COLOR OF SPECIFIC OBJECT IS EXTRACTED FROM GIVEN INPUT IMAGE

**Š11** 

WITH REFERENCE TO COLOR CORRECTION PARAMETERS ASSIGNED TO SPLIT COLOR REGIONS, NxMxL IN NUMBER, OBTAINED BY SPLITTING DISTRIBUTABLE REGION OF SPECIFIC OBJECT WITH RESPECT TO HUE, SATURATION, AND BRIGHTNESS INTO N FOR HUE, M FOR SATURATION, AND L FOR BRIGHTNESS, OPTIMUM COLOR CORRECTION PARAMETER ADAPTED TO EXTRACTED REPRESENTATIVE COLOR IS DETERMINED

**S**12

COLOR CORRECTION CONVERSION ACTING ONLY UPON SPECIFIC HUE IS CARRIED OUT BY THE USE OF OPTIMUM COLOR CORRECTION PARAMETER

**S13** 

**START** 



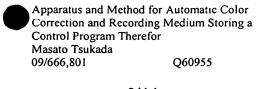
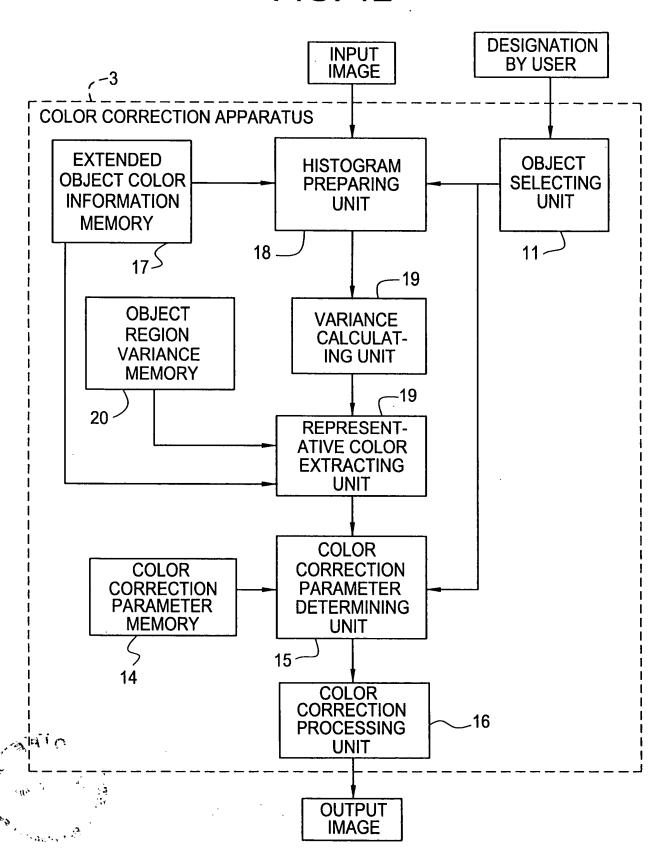
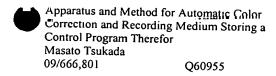


FIG. 12





### FIG. 13

START

REPRESENTATIVE COLOR OF SPECIFIC OBJECT IS EXTRACTED FROM GIVEN INPUT IMAGE BY THE USE OF VARIANCE OF COORDINATE POSITIONS ON IMAGE IN ADDITION TO DISTRIBUTION FREQUENCY RELATED TO HUE, SATURATION, OR BRIGHTNESS OR COMBINATION THEREOF

**S**21

WITH REFERENCE TO COLOR CORRECTION PARAMETERS ASSIGNED TO SPLIT COLOR REGIONS, NxMxL IN NUMBER, OBTAINED BY SPLITTING DISTRIBUTABLE REGION OF SPECIFIC OBJECT WITH RESPECT TO HUE, SATURATION, AND BRIGHTNESS INTO N FOR HUE, M FOR SATURATION, AND L FOR BRIGHTNESS, OPTIMUM COLOR CORRECTION PARAMETER ADAPTED TO EXTRACTED REPRESENTATIVE COLOR IS DETERMINED

**S22** 

COLOR CORRECTION CONVERSION ACTING ONLY UPON SPECIFIC HUE IS CARRIED OUT BY THE USE OF OPTIMUM COLOR CORRECTION PARAMETER

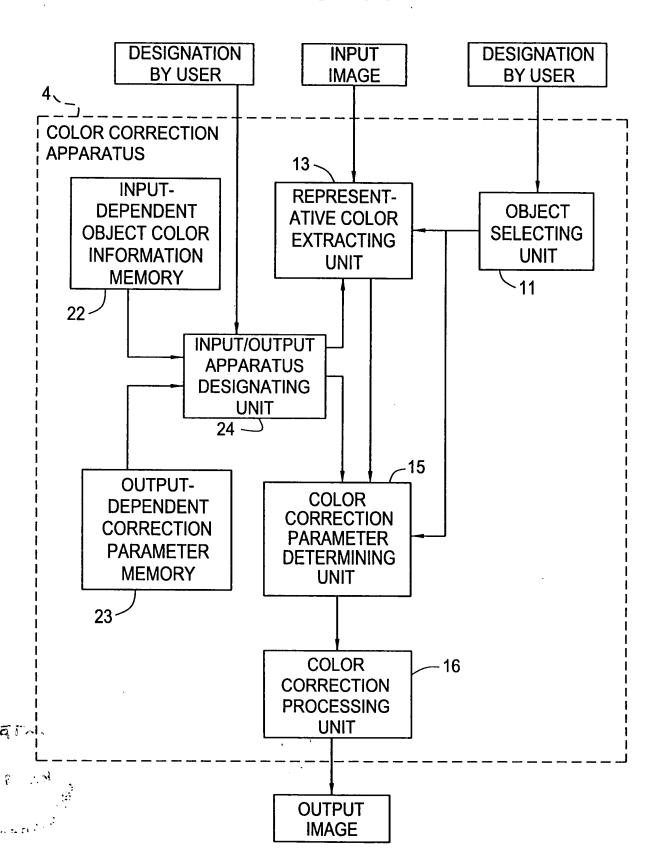
**S23** 

START



Apparatus and Method for Automatic Color Correction and Recording Medium Storing a Control Program Therefor Masato Tsukada 09/666,801 Q60955

FIG. 14



Apparatus and Method for Automatic Color Correction and Recording Medium Storing a Control Program Therefor Masato Tsukada 09/666,801 Q60955

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# FIG. 15

INPUT APPARATUS
APPARATUS APPARATUS C
APPARATUS APPARATUS C
SELECTION OK

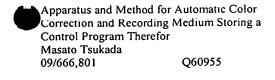
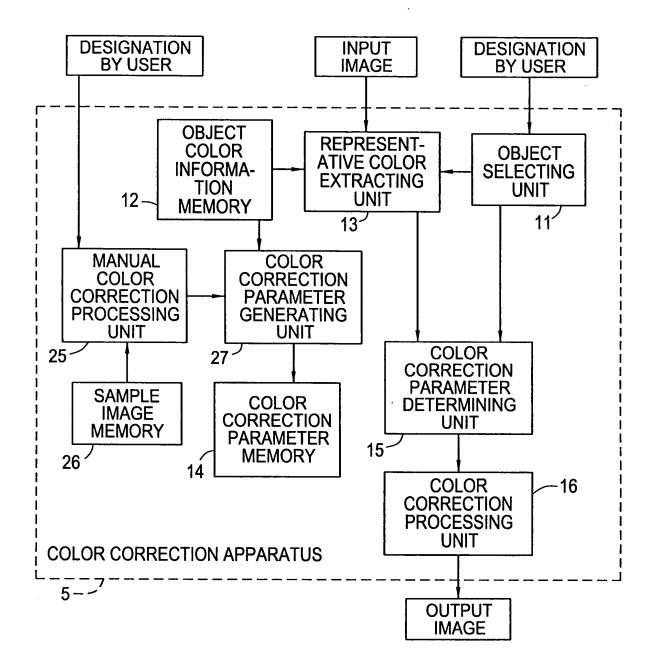


FIG. 16





pparatus and Method for Automatic Color orrection and Recording Medium Storing a Control Program Therefor Masato Tsukada 09/666,801 Q60955

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# **FIG.17**

□ OBJECT A □ OBJECT B □ COUNTER 1/N	OBJECT C NEXT IMAGE DISPLAY
OBJECT A	
BEFORE CORRECTION	AFTER CORRECTION
PARAMETER 1 ———————————————————————————————————	PARAMETER 3 ———————————————————————————————————

